

Alert

dvrpc

September 2017

Alert is a monthly update on transportation and air quality planning activities in the Delaware Valley.



Health and Air Quality

Research Indicates that Air Pollution in Automobile Cabin is More Harmful than Previously Thought

According to research published in the June 27, 2017 edition of *Atmospheric Environment*, commuters may be exposed to up to twice the air pollution that is being recorded by roadside monitors.

Most traffic pollution sensors are placed on the ground alongside the road and take continuous samples for a 24-hour period in order to measure near-road air pollution. The composition of that exhaust, however, changes rapidly enough for drivers to experience different conditions than are being measured at roadside sensors. Long-term sampling also misses variabilities caused by road congestion and environmental conditions.

In order to get a better picture of the exposure of rush-hour commuters to air pollution, researchers from Duke University, Emory University, and the Georgia Institute of Technology strapped specially designed sampling devices into the passenger seats of cars during morning rush hour commutes in downtown Atlanta.

Researchers installed sampling devices that draw in air at a similar rate to human lungs to provide detectable levels of pollution. The device was then secured to the passenger seats of more than 30 different cars as they completed more than 60 rush hour commutes.

The devices detected up to twice as much particulate matter as the roadside sensors on the same routes. The team also found that the pollution contained twice the amount of chemicals that cause oxidative stress, which is thought to be involved in the development of many diseases including respiratory and heart disease, cancer, and some types of neurodegenerative diseases.

Some drivers took highway routes while others travelled on busy thoroughfares in downtown Atlanta. While other details like speed and having windows open varied, all of the sampling found more risk in air exposure than previous studies conducted with roadside sampling devices.

"There are a lot of reasons an in-car air sample would find higher levels of certain kinds of air pollution," said Heidi Vreeland, a doctoral student and first author of the paper. "The chemical composition of exhaust changes very quickly, even in the space of just a few feet. And morning sun heats the roadways, which causes an updraft that brings more pollution higher into the air."

The authors note that lack of transportation alternatives for commuters in Atlanta are contributing factors to both congested highways and commuters' exposure to air pollutants.



Save the Date

Monday

September 18, 2017

Public Meeting: Connections
2045 Long-Range Plan and
Conformity Determination
for TIPs and Plan
6:00 – 8:00 pm

Location of Event:
Collingswood Senior Center
30 W. Collings Ave.
Collingswood, NJ

Tuesday

September 19, 2017

Public Meeting: Connections
2045 Long-Range Plan and
Conformity Determination
for TIPs and Plan
4:00 – 6:00 pm

Location of Meeting:
DVRPC Conference Center
8th Floor
6th and Race Streets
Philadelphia, PA

For more information on the article ““Oxidative Potential of PM_{2.5} During Atlanta Rush Hour”, please visit: <http://pratt.duke.edu/news/rush-hour-pollution>

Study Shows that Using the Air Conditioner Can Reduce Exposure to Highway Air Pollutants

According to the U.S. Census Bureau, the average American commute takes approximately 26.5 minutes. That commute also can be hazardous to public health, exposing drivers to an increased amount of air pollutants that have been linked to a number of health concerns.

Recent research published on August 10, in the Journal *Atmospheric Environment*, by engineers at Washington University in St. Louis indicates that commuters can reduce their exposure to highway air pollutants while commuting by selectively using the vehicle’s air conditioning.

“We know that traffic generates a lot of pollution, and therefore it’s the time when you’re traveling in traffic that you can have a disproportionately high amount of your daily exposure to many harmful pollutants,” said Anna Leavey, a research scientist at the School of Engineering and Applied Science. “What we wanted to see was: When and where are our highest exposures occurring, and how should one be driving to mitigate the risk?”

After analyzing the data, pollutant measurements, and corresponding weather conditions, the researchers determined the best approach to cutting your risk of pollutant exposure while commuting was using the vehicle’s air conditioner. This reduced the pollutants in the vehicle by 20-34 percent, depending on the different variables examined, as well as outdoor concentrations, weather, and road conditions. Keeping the windows closed also reduced pollutant exposure by approximately 8-44 percent after all factors were taken into account.

“The vehicle cabin can be viewed as a buffer, protecting us from the outside air,” Leavey said. “While driving with your air conditioning on and windows closed is the most protective thing that you can do, running the AC can decrease your fuel economy. That’s why adopting a dynamic behavior modification approach is recommended, in which the AC or closed windows are used when following a highly polluting vehicle, or on the freeway, which tends to be more highly polluted. Once you have left the polluted environment, we recommend opening your windows to remove any pollutant build-up from your car.”

For more information on the article ““Crank the AC, Cut in Air Pollution”, please visit: <https://source.wustl.edu>

Air Quality Information

U.S. EPA Launches Interactive Map of Air Quality Monitors

The U.S. Environmental Protection Agency (EPA) has launched an on-line application for mobile phones and computers that allows users to map air quality monitors and access information on monitor data and Clean Air Act attainment status.

The app provides downloadable, air quality data from monitor-specific readings, as well as geographic data on non-attainment areas and federal wilderness and national parks. Data can be viewed as annual summaries or daily readings and can be downloaded into .csv files. Information on the attainment status of the monitor’s host county is also available. This mapping layer shows which counties are not meeting the National Ambient Air Quality Standards (NAAQS), indicates when the county was designated as non-attainment and subsequent attainment of the NAAQS, and provides links to the Congressional Federal Register attainment designation documents.

The app is a helpful tool to collect air quality information from local air quality monitors and understand the attainment status of host counties.

To access EPA’s Interactive Map of Air Quality Monitors, please visit: <https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors>



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